

BULLETIN

The energy and planning resource for Western utilities

HYDROPOWER MAKES ITS MARK ON ELECTRIC CO-OP

The beauty and the challenge of renewable energy is that there is no silver-bullet resource, no one-size-fits-all portfolio, and a utility's territory may hold more than one overlooked opportunity to add new kilowatts of clean, locally generated power. Being alert to such opportunities is how San Miguel Power Association (SMPA) built a power portfolio that includes 2.3 percent locally generated hydropower.

Right place, right time

Small hydropower development is highly dependent on location, and San Miguel is lucky that its southwestern Colorado service territory is rich in the resource. "Blessed," in the words of Marketing and Energy Services Manager Brad Zaporski who added that there is more to the utility's success than water. "We have existing infrastructure from the historic mining industry so the facilities can be developed with minimal environmental impact," he said.



One of the nation's oldest hydropower plants, the renovated Ouray micro-hydro unit generates about 4 million kWh annually. (Photo by San Miguel Power Assoc.)

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In fact, commercial hydropower plants were generating electricity in the area long before the Department of Energy was created, long before Roosevelt signed the Rural Electrification Act. The Ouray hydro plant began operating Dec. 6, 1885, making it one of the oldest in the nation. Private developer HydroWest Inc. bought and renovated the inactive plant in 1992, and today it generates about 4 million kilowatt-hours (kWh) annually for San Miguel.

The 11-kilowatt (kW) Mayflower Mill Hydro in Silverton is another history-making facility, the first small hydro project in Colorado to be permitted

under the Hydropower Regulatory Efficiency Act (HREA). Congress passed the law in 2013 to streamline the permitting process for hydro units smaller than 5 megawatts (MW). "That is going to make a lot more small projects feasible," noted Zaporski.

Comes in all sizes

In many cases, however, the cooperative simply makes its own feasibility. At 8 MW, the Ridgway Reservoir hydro plant doesn't quite qualify for the HREA, and it is the single largest renewable energy project in San Miguel's service territory. It generates about

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24,000 megawatt-hours (MWh) in an average water year, or enough electricity to power 2,500 homes annually, and far more than the co-op is able to purchase on its own.

San Miguel worked out an agreement with its wholesale power provider, Tri-State Generation and Transmission Association and plant-owner Tri-County Water. Tri-State buys the energy the plant produces between June and September, and San Miguel consumes the power. The city of Aspen, Colorado, buys the facility's output during the other eight months of the year.

Though considerably smaller at 320 kW, the generating station at the Pandora Water Treatment Facility in Telluride scores big points for maximum use. Four high lakes above the town send water through the Bridal Veil hydro plant above town, producing about 2 million kWh annually. The next stop is the Pandora hydro unit at the treatment facility, and from there to the homes and businesses of Telluride for consumption. The water ends its journey through the city at the Telluride wastewater plant where a large solar array produces 10 percent of the plant's electricity needs. "And all of these things happen in just three miles, largely through the use of existing



The Pandora Water Treatment Facility captures the water from Bridal Veil Falls, less than two miles above town, to generate 340 kW before sending it to the homes and businesses of Telluride. (Photo by San Miguel Power Association)

infrastructure from the mining era," said Zaporski.

San Miguel also has several micro-hydro units—those that generate less than 100 kW—in its portfolio. The 90-kW Coal Creek hydro plant just south of Ridgway was the co-op's first micro hydro purchase in 2009, and the 22-kW Ouray Hot Springs hydro plant is one of three net-metered hydro facilities on SMPA's system.

Raising green for green power

Focusing on small and micro-hydropower development isn't the only creative thing about San Miguel's approach to renewable energy, either. "We do it all on a zero-subsidy basis," Zaporski stated proudly.

The co-op offers its members two programs that allow them to fund hydropower and other renewable projects outside of rates. Through the Green Block program, members purchase renewable energy credits (RECs) from SMPA's existing renewable generators to offset their energy consumption. These Green Blocks, as the RECs are called, represent 100 kWh of renewable energy and cost \$1 per block, per month. All SMPA members can purchase as many blocks as they wish and the cost is added to the monthly bill. Local municipalities

looking to offset their energy use also purchase the RECs.

The Green Cents program is another simple and easy way for members to support community renewable energy projects. Members can choose to round up their monthly bill to the nearest dollar, with the extra pennies funding new projects. Participation costs members on average around \$7 annually, and they may cancel at any time.

Opportunity keeps on knocking

In a news release about the Ridgway Dam project, Colorado Small Hydro Association President Kurt Johnson, of Ophir, said, "Only about 3 percent of the nation's dams currently include hydropower. There is an enormous untapped opportunity to generate new clean energy using existing infrastructure."

Zaporski agrees, noting that San Miguel has two more small hydro projects in the works. He added that the Regional Conservation Partnership Program is a good place for utilities to find funding, partners and technical assistance to develop hydropower resources in their area. "Partnership is really what makes these projects happen," he declared. ⚡

Source: Colorado Rural Electric Association, August 2015

ENERGY SERVICES BULLETIN

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**ENERGY
SERVICES**
Western Area Power Administration

MINNESOTA CO-OPS PUT USDA LOANS, GRANTS TO WORK FOR MEMBERS

The challenge of funding maintenance and improvements on electrical infrastructure is simply a fact of life for cooperatives, but one that the Department of Agriculture's (USDA) Rural Utility Service (RUS) seeks to make easier. Direct loans and loan guarantees from the RUS Electrical Program help electric utilities like Nobles Cooperative Electric and Federated Rural Electric Association in southwest Minnesota repair and modernize their grids.

The two Western customers were among the latest recipients of nearly \$2.3 billion in loans to build and improve rural electric infrastructure. Nobles Cooperative Electric is receiving a loan of \$10,903,000, while Federated Rural Electric will receive a \$6,364,000 loan. Part of the loan is being used to acquire territory from investor-owned Alliant Energy, said Rick Burud, general manager for both utilities. "Each cooperative will gain about 1,700 new members," he noted. "We will use the rest of the funding to repair storm damage on our existing system and improving services on the acquired territory."

Go-to resource

Rural electric utilities have long relied on RUS loans to supplement their maintenance budgets and fund special projects, and Nobles and Federated are no exception. The co-ops apply every four years after doing a four-year construction work plan to determine their infrastructure needs. "The loans mainly fund work on our distribution system," Burud said. "We do everything to from new line construction, purchase automatic meter reading infrastructure to funding new substations."

The application process does take some patience, Burud acknowledged, but the co-ops are able to complete it in-house. Utilities must provide a financial forecast in addition to the



A big check tops off Federated's efforts to secure AGCO's \$740,000 economic development loan. Pictured: Eric Fisher, AGCO, director of operations; Colleen Landkamer, USDA Rural Development, state director; and Richard Burud, Federated, general manager. (Photo by Federated Rural Electric Association)

four-year work plan. "The regional USDA representative does a lot of work, too, to ensure everything is in order," he added.

To help automate the process, USDA has created an online application intake system. Users can create an application, upload attachments, sign certifications and draw service areas, to name a few features that can be accessed any time of the day or night.

Supporting economic development

A strong local economy is just as important to the health of a community as a strong, modern grid, and USDA offers funding opportunities for that type of project, too. Federated REA has built an award-winning economic development program on the tools USDA offers to rural utilities.

Over the last 25 years, the utility has leveraged more than \$3.6 million in USDA grants and loans, along with Federated economic development

loans, to retain or create more than 1,500 jobs. Projects have ranged from expanding an insurance claim center to installing a wind turbine to building an ethanol plant. Several co-op members have applied for and received grants from the Rural Energy for America Program (REAP) for facility improvements such as grain dryers and ground-source heat pumps. Communities can access a revolving loan fund Federated established in 2008, even for smaller investments such as purchasing a fire truck or building a meeting hall and garage.

"Applicants must be co-op members, but our program also helps members on municipal lines in our territory," explained Marketing and Communications Manager Andrea Christoffer. "One of the criteria for a loan from the revolving fund is that the project helps the economy of our cooperative's service area."

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NEW OSHA REGS FOR CONFINED SPACES SAFETY

New confined space regulations from the Occupational Health and Safety Administration (OSHA) taking effect Jan. 8, 2016, have significant implications for home performance companies and weatherization professionals.

This rule is designed to help prevent tragic situations like a recent one where a construction foreman died from asphyxiation after entering a manhole with an uncontrolled hazardous atmosphere.


Under the new rule (29 CFR 1926 Subpart AA), permits to access specific confined spaces are granted by the general contractor or lead contractor on each job. There are numerous safe entry procedures that require the contractor to plan and prepare ahead of time. The rule will apply to any space that meets three criteria:

- It is large enough for a worker to enter it
- It has limited means of entry or exit
- It is not designed for continuous occupancy

A space may be a permit-required confined space if it has a hazardous atmosphere, the potential for suffocation, a layout that might trap a worker through converging walls or a sloped floor, or any other serious safety or health hazard.


Employers will be required to train workers to ensure they know about the existence, location and dangers posed by each permit-required confined space.

To help small businesses become compliant, OSHA has published *The Small Entity Compliance Guide* (pdf). This is plain language explanation covers all aspects of the Confined Space in Construction Rule, including how eliminating or isolating hazards can allow the contractor to reclassify a permit-required confined space as a non-permit confined space.



Occupational
Safety and Health
Administration
www.osha.gov

Protecting Construction Workers in Confined Spaces: Small Entity Compliance Guide



OSHA 3825-09 2015

Learn more about the new regulations on OSHA's Confined Space website, or check out *The New Confined Spaces in Construction – The Big Picture*, a free archived webinar from the National Association of Home Builders.

Also, if you have found a good resource for training energy auditors, customer program representatives and preferred contractors to comply with the new regulation, please share it with Energy Services. Safety always comes first! ⚡

REPORT: ENERGY APPS COULD BENEFIT CUSTOMERS, UTILITIES

Energy Apps for Residential Customers, a new report from Navigant Research, suggests that utilities win when customers use apps to manage their energy consumption from their phones or tablets.

According to Navigant, customers who are more engaged and more in control of their energy use are more satisfied with their utilities and contribute to seamless grid efficiency.

Smart devices, such as meters, thermostats and appliances, now provide utilities with data about specific customer needs that can make that scenario happen. Sacramento Municipal Utility District (SMUD), for example, is among the power providers using this information to shape new customer programs and services. However, in an interview with American Public Power Association (APPA), SMUD president Arlen Orchard

acknowledged that utilities now find themselves buried in a mountain of information, unclear on how to turn it into actionable steps for customers.

Navigant concluded that an app might be the best way for a utility to offer customers these programs and services. Drawing on case studies of utilities that created energy-management apps for consumers, the research showed generally positive customer experiences and possible energy savings of about 8 percent.

Utilities do not need to develop their own apps, either, to provide consumers with the smart technology they increasingly expect. The APPA article cited another report, *Pathway to a 21st Century Electric Utility Utilities*, which recommended utilities set up an energy app store or page on their websites. The study by the sustainability think tank Ceres noted that plenty of existing tools allow homeowners

to operate demand response, load management and time-of-use products from their smartphone or other device.

An energy app store would not only introduce the products, but educate customers, highlight quality vendors and allow for customers to order products immediately with one click. Energy product vendors could offer customers the same service, but a utility-sponsored app store would have the advantage of providing a wider range of tools. Utilities are also in the best position to track how customers use the apps and their satisfaction levels, the study concluded.

Energy Services would like to know if your utility is offering apps to customers, or is considering including such tools in a customer program. Contact the *Energy Service Bulletin* editor with your story. ⚡

Source: APPA Public Power Daily, 11/12/15

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AGCO Corp., a worldwide manufacturer and distributor of agricultural equipment, is not on Federated's electric system but the company's employees and customers are. In 2011, the utility helped the company obtain a USDA revolving loan to expand its Jackson, Minnesota, facility and bring a tractor assembly line to town from overseas. The project retained 850 jobs in the area, added more than 200, increased school enrollment and stimulated the local economy. The National Rural Electric Association and the Rural Electricity Resource Council both recognized Federated with awards for community investment.

Get started with USDA

Applying for USDA funding is not that difficult, insisted Christoffer, who used to fill out grant applications for members in the early years of the economic development program. The Federal Register Notices clearly list the required information, she pointed out. "All applicants have to do is answer the questions. And they can contact their state energy coordinator if they need help," she said, echoing Burud.

Member services representatives and other rural co-op staff can find more assistance on the USDA Rural Development website. Most utilities are aware of programs and services for utilities, but a refresher tour can uncover new opportunities.

For economic development opportunities, check out programs and services for businesses. Several programs, such as REAP, are related to energy use, but loans and grants are available for many other types of business investments, as well. Members of rural electric cooperatives can always give their power providers a call to help them apply for the programs.

Utilities might want to familiarize themselves with programs to fund community and individual projects, too. As Nobles Cooperative and Federated REA know, what is good for the community is good for the utility that serves the community. ⚡

Source: USDA Rural Development via Energy Central, 10/23/15

USDA OFFERS FUNDING TO PROTECT, RESTORE KEY WATER RESOURCES

Financial assistance to purchase agricultural land easements is available from the Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS). The Agricultural Conservation Easement Program is offering \$350 million to support the voluntary sale of easements to maintain farms and ranchland and to protect critical water resources.

Native American tribes, state and local governments and non-governmental organizations that have farmland or grassland protection programs are eligible to partner with NRCS to purchase conservation easements.

Agricultural land easements help to protect the nation's food supply by preventing productive working lands from being converted to non-agricultural uses. Lands protected by easements also enhance environmental quality and preserve historic sites, wildlife habitat and open space.

Wetland reserve easements improve water quality by filtering sediments and chemicals, reducing flooding and recharging groundwater, all critical concerns to agricultural producers.

In announcing the funding, Agriculture Secretary Tom Vilsack explained that the USDA is committed to protecting the long-term viability of farming across the country, as well as

restoring vital sensitive wetlands. "The benefits of restoring, enhancing and protecting these working agricultural lands and critical wetlands cannot be overstated," he said.

NRCS state offices are accepting applications for partnership wetland restoration projects from eligible partners through July 31, 2015. **Application deadlines vary by state.**

To enroll land through wetland reserve easements, landowners may apply at any time at the any time at the local USDA Service Center. ⚡

Source: USDA Natural Resource Conservation Service, 11/19/15



Riparian easements, like this one along a creek in Story County, Iowa, preserve water quality, wildlife habitat and open space. (Photo by USDA Natural Resource Conservation Service)

NEW REPORT FOCUSES ON MEASURING FLEXIBILITY IN UTILITY RESOURCE PLANS

Flexibility Inventory for Western Resource Planners, a new report from Berkeley Laboratory, shows how utilities can develop a high-level, year-to-year flexibility inventory that tracks flexibility supply and demand based on integrated resource plans (IRPs).

Historically, utilities do not evaluate flexibility supply and demand in their planning studies. However, power systems will need to be more flexible to successfully integrate increasing amounts of variable generating resources, such as wind and solar, and to deliver the full benefits of a diversified portfolio.

Flexibility supply is the capability of generation and demand to change in response to system conditions. Flexibility demand is largely determined by the amount that the net demand changes over different timeframes and the degree to which those changes can be predicted. Berkeley researchers apply the flexibility inventory to western IRPs from the Resource Planning Portal database.

The report finds that the largest amount of flexibility supply and demand occur over long time intervals (more than 6 hours), with supply based on the ability to ramp resources fully and turn units on or off. Flexibility supply is most limited relative to flexibility demand over shorter intervals (e.g., 15 minutes) when there is less time to ramp resources.

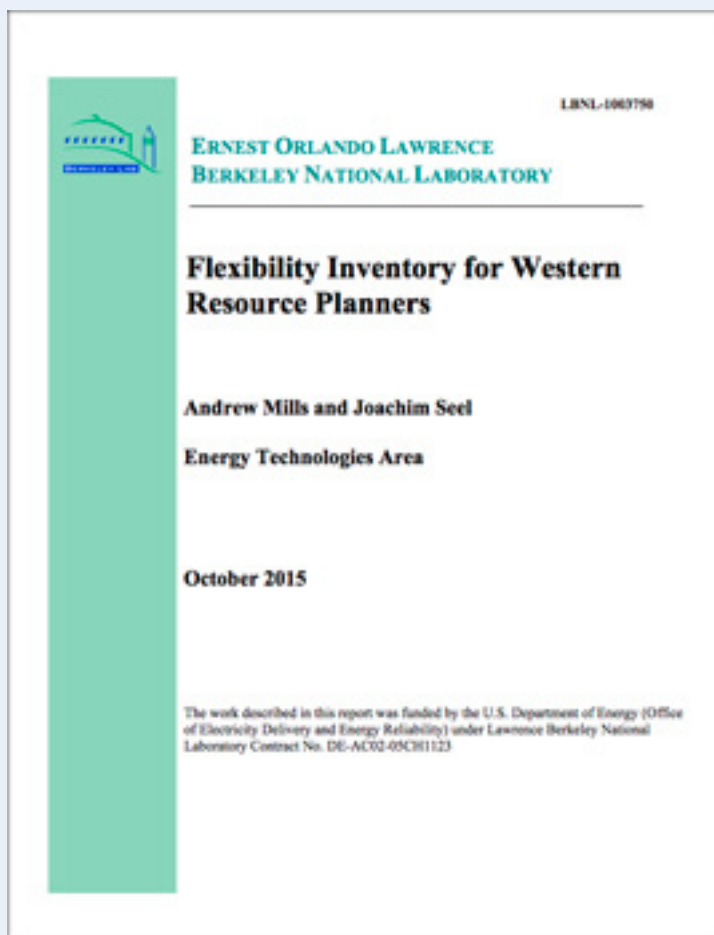
The choice of modeling parameters in the flexibility in-

ventory can have a big effect on the measure of flexibility, especially during challenging shorter intervals. Researchers identified ramp rates for coal and combined-cycle gas turbine units, startup times for combustion turbines and risk tolerance of the decision maker as being among the most important parameters. The study found that resources that can ramp quickly—such as energy storage, direct load control and quick-start generators—have the

greatest potential to increase flexibility supply.

You can download the report, a summary slide deck and a recording of a webinar presentation summarizing the report from Berkeley Lab publications. ⚡

Source: Lawrence Berkeley Laboratory, 10/27/15



WHITE PAPER, WEBINAR FOCUS ON VALUING ENERGY-EFFICIENT HOMES

Discover how residential energy-efficiency programs can help to educate the real estate industry about the value of energy-efficient homes on Wednesday, Nov. 18, at 12 p.m. MT. Register for *Capturing Efficiency in Residential Real Estate Transactions*.

The Energy Department (DOE) recently released a new white paper highlighting programs that make homes' energy-efficient features visible to appraisers, real estate agents, mortgage lenders, homebuyers and sellers.

According to multiple studies, homebuyers are giving more consideration to energy efficiency in their purchasing decisions. In fact, energy-efficient homes sell for a premium in some parts of the country. Still, the home sale process frequently fails to account for the value of high-performance home features. Only when investments in energy efficiency are more accurately reflected in home resale prices will homeowners be confident that efficiency investments will be recouped at resale.

The Lawrence Berkeley National Laboratory prepared a white paper on programs around the United States that are successfully engaging the real estate community and overcoming barriers to valuing energy efficiency in the home resale process. The



research draws on literature and interviews with efficiency program staff and real estate professionals.

Energy-efficiency programs already capture data needed to make efficiency more visible in real estate transactions. Program administrators can make sure this information reaches the people who need it in formats they can use and understand. The paper highlights a number of programs that have already begun to close the energy information gap through efforts including:

- Issuing a home energy rating or score to program participants
- Issuing certificates that leverage existing national standards
- Requiring participating contractors and homebuilders to attach stickers documenting a home's efficiency

information to the home's circuit box

- Working with the local Board of Realtors to establish green fields in the local or regional MLS
- Adopting interoperable standards for documenting efficiency data

The Better Buildings Home Energy Information Accelerator brings together real estate and efficiency partners to develop and demonstrate sustainable approaches to making energy-related information more accessible to home buyers and sellers. On the commercial and industrial side, the program is working with the Appraisal Foundation to improve resources for appraisers who are involved with energy-efficient buildings. ⚡

Source: DOE Better Buildings Program, 11/3/15